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Psoriasis is associated with elevated endothelial cell and platelet microparticles

1,2-J. Takeshita/2,3-N. Mehta/1-A. Van Voorhees/4-J. Moore/1-M. Wilcox/3-A. Raper/3-E.R. Mohler/1, 2-J.M. Gelfand *1-Department of Dermatology, University of Pennsylvania, Philadelphia, PA; 2-Center for Clinical Epidemiology and Biostatistics, University of Pennsylvania, Philadelphia, PA; 3-Cardiovascular Insititute, University of Pennsylvania, Philadelphia, PA; 4-Department of Pathology and Laboratory Medicine, University of Pennsylvania, Philadelphia, PA*

Severe psoriasis is a risk factor for cardiovascular (CV) disease beyond traditional risk factors. The mechanism of atherogenesis in psoriasis, however, remains unknown. Recent findings suggest that cell membrane vesicles, or microparticles, which are released upon cell activation or apoptosis, are associated with CV disease and may play a pathogenic role. Levels of microparticles, particularly from endothelial cells and platelets, are elevated in patients with cardiovascular disorders, metabolic syndrome, other inflammatory diseases, autoimmune conditions and have recently been shown to be predictive of CV outcomes. To understand if microparticles may serve as a potential link between psoriasis and CV disease, we measured absolute circulating microparticle levels, concentrations and types (endothelial- versus platelet-derived) of microparticles in blood samples from psoriasis patients ($n = 20$) and compared them to healthy controls ($n = 41$). Platelet-poor plasma was separated from whole blood after rigorous high-speed centrifugation for microparticle analysis. Microparticles were fluorescently labeled and characterized by flow cytometry. We found higher absolute microparticle levels (2.6-fold; $p < 0.01$) and microparticle concentration (per uL, 50-fold; $p = 0.01$) in psoriasis compared to healthy controls, which persisted after adjustment for traditional cardiovascular disease risk factors. Characterization of the microparticles revealed a predominance of endothelial-, platelet-, and T lymphocyte-derived microparticles, all of which were present in higher absolute levels in psoriasis patients compared to healthy controls ($p < 0.01$, $p < 0.01$, $p = 0.03$, respectively) beyond traditional risk factors. Our findings of increased microparticle levels, independent of cardiovascular risk factors, in psoriasis suggests that the presence of increased endothelial cell and platelet activation with turnover may contribute to the heightened atherogenesis observed in psoriasis.

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Deferasirox for Porphyria Cutanea Tarda: A pilot study

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Porphyria cutanea tarda (PCT), the most common of the porphyrias, is often difficult to treat. Deferasirox is a recently approved oral iron chelating agent which reduces iron stores in patients with chronic iron overload due to blood transfusions. We sought to determine the efficacy and safety of deferasirox in a pilot trial for the treatment of patients with PCT. The primary objective was to eliminate blister formation during the course of the study. Prospective, open-label, non-comparative study. University-affiliated tertiary health care center in Dallas, Texas. Ten patients with PCT were treated with deferasirox for 6 months. The diagnosis was established by documenting the presence of elevated porphyrins in the urine and a history of developing 3 or more blisters per month for at least 3 months prior to enrollment. Patients were treated with 250 mg of deferasirox daily with an increase to 500 mg daily after 2 months if new blisters continued to develop. The improvement in number of blisters at the end of the 6-month treatment period was assessed. Eight of 10 patients completed the study. All had resolution of their blistering. Six had a reduction in urinary porphyrins and seven had a reduction in ferritin levels. The treatment was well tolerated. In this small pilot study, all patients with PCT who completed the study had resolution of their blistering and most had a substantial reduction in urinary porphyrins and ferritin level. Future, larger controlled studies are needed to confirm these findings. Deferasirox may be a useful alternative to existing treatment modalities for PCT.

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A new perspective on an old problem: The use of smartphones in screening for Hansen's Disease in Trinidad and Tobago

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In 2005, Trinidad and Tobago contributed the highest proportion of Hansen's Disease cases in the Caribbean, with diagnosis occurring on average, 2-5 years after clinically apparent disease. The World Health Organization (WHO) states the need to: ''Implement innovative approaches for case-finding in order to reduce the delay in diagnosis and the occurrence of grade-2 disabilities.'' Similar to other Caribbean countries, social workers visit the homes of people known to have Hansen's Disease, and screen their family members for any clinical evidence of disease. The social workers thus have the greatest contact with the most at risk population for contracting Hansen's Disease. We designed a pilot study to train a social worker in using a smartphone application to screen household contacts of known Hansen's Disease cases. The social worker was trained to recognize and take high quality images of known Hansen's Disease lesions in the clinic setting using the smartphone's 5.2 megapixel camera, and to input photographs and clinical data into the smartphone software program. After two weeks of training, the social worker used this format to screen household contacts of known Hansen's disease cases in their homes. Encrypted case data was submitted to a secure website. Broad availability of cellular phone coverage with associated internet connectivity enabled cases for contacts screened even in remote locations, to be transmitted in the field. Two dermatologists accessed the website, reviewed the cases and triaged suspected Hansen's Disease cases to a Hansen's Disease clinic for further evaluation. The social worker's detection rate for Hansen's disease increased from 0.25 cases a month to 5 cases in a month. This pilot demonstrates that smartphone based store and forward teledermatology applications can be utilized by low skilled health workers to take reliable, high quality images in the field, and increase the detection of Hansen's Disease.

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Development and Pilot Testing of the Cutaneous LUpus ScrEening Tool (CLUSE)

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Cutaneous lupus erythematosus (CLE) is a chronic inflammatory disorder of the skin that may be accompanied by systemic manifestations. Currently, no validated tool exists to confirm self-reports of physician-diagnosed CLE for use in epidemiologic studies. We have developed and pilot tested the Cutaneous LUpus ScrEening (CLUSE) tool in an outpatient dermatology setting at a university center. The CLUSE tool includes features of disease validation for CLE as well as its various phenotypes. CLUSE is a self-administered questionnaire with 15 closed-ended questions requiring a ''yes'' or ''no'' response, and includes high quality photographs depicting each of the three main subtypes of CLE (acute, subacute, and chronic). All English-speaking patients completed the questionnaire without assistance. The presence or absence of CLE was established by a board-certified dermatologist. We administered the CLUSE tool to 72 individuals seen in dermatology clinics. A total of 59 were included in the analysis (10 did not complete the questionnaire and 3 had a less common variant of CLE not covered by the photographs). There were 15 participants in the CLE group and 44 participants in the non-CLE group. We developed scoring algorithms to assign a diagnosis of CLE. A combination of 6 questions resulted in a sensitivity of 80% and a specificity of 93.2% for CLE. This pilot study highlights the need for a validated tool for self-reports of CLE to use in epidemiologic studies as well as the challenges that exist in designing a tool for this particular disease. In addition, it suggests that the CLUSE tool can be useful in excluding patients with non-CLE. The high specificity of the tool indicates that it may be advantageous in capturing individuals with CLE from a larger cohort to utilize for epidemiologic studies.

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Co-morbidities associated with Vitiligo: A 10-year retrospective study

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Vitiligo is a skin disorder characterized by depigmentation that has a worldwide prevalence of 0.1-2% and has been associated with several co-morbidities. Thyroid disorders are commonly associated as are other endocrinopathies such as Addison's disease and diabetes mellitus. Pernicious anemia, systemic lupus erythematosus, inflammatory bowel disease, rheumatoid arthritis, and psoriasis also are associated, though the significance of these is debated. The goal of this study was to characterize co-morbidities among vitiligo patients seen at Brigham and Women's Hospital between January 2000 to June 2010. After Institutional Human Research Committee approval, all medical records within the Research Patient Data Repository were evaluated retrospectively using a novel artificial intelligence program that allowed natural language processing. A total of 3280 patients with vitiligo were identified using ICD 9 code 709.01, search for 'vitiligo' and 'vitiligo-related disorders in problems lists. We selected 300 patients randomly and validated the diagnosis by manually reviewing medical records. These results were then used to create a model that was applied to the larger set yielding 2441 validated vitiligo patients. Of these, 1657 (68%) were diagnosed by dermatologists. Women were more frequently represented (57.6%) than men. The majority of patients were White (57%), followed by Hispanic (19%). The mean age was 50.7 years. 565 (23%) had one or more co-morbidities: 263 (11 %) thyroid-related (29 hyperthyroidism, 187 hypothyroidism, 47 thyroiditis), 186 (8%) psoriasis, 72 (3%) rheumatoid arthritis, 53 (2%) systemic lupus, 55 (2%) inflammatory bowel disease (14 Crohn's, 33 ulcerative colitis, 8 unspecified), 59 (2%) alopecia areata, and 20 (1%) Type I diabetes mellitus. No cases of co-morbid Addison's disease or pernicious anemia were found. We found a high prevalence of co-morbidities among individuals with vitiligo presenting to a teaching hospital in Boston. Physicians caring for vitiligo patients may consider screening for these co-morbidities.